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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/934,739	08/22/2001	Louis B. Rosenberg	IMM1P018B	9387

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EXAMINER

DHARIA, PRABODH M

ART UNIT

PAPER NUMBER

2673

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/934,739	ROSENBERG ET AL.	
	Examiner	Art Unit	
	Prabodh M. Dharia	2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 77-107 is/are pending in the application.
- 4a) Of the above claim(s) 1-76 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 94-96 is/are allowed.
- 6) ☒ Claim(s) 77-82,84,86-93,97,99-104 and 106 is/are rejected.
- 7) ☒ Claim(s) 83,85,90,92,98,105 and 107 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>03-11-03, 04-12-04</u> | 6) <input type="checkbox"/> Other: _____ |

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1. **Status:** Receipt is acknowledged of papers submitted on 03-11-2003 under amendments and new claims have been placed of record in the file. Claims 77-107 are pending in this action. Claims 1-76 are cancelled.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 77,86,97,99, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroo Iwata "Artificial Reality with Force-Feedback: Development of Desktop Virtual Space with Compact Master Manipulator," Computer Graphics, vol. 24, No. 4, 1990, pp. 165-170 in view of Schena et al. (2001/0026266 A1).

With regard to claim 77,99, Iwata teaches a computer readable medium including program instructions (figure 9) for simulating the spatial interaction of a displayed first simulated object (figure 4) with a displayed second simulated object (figures 11-13) in a computer-simulated spatial environment such that the user is provided with a force feedback that realistically represents said interaction (abstract), said program instructions performing the following on a computer system: executing a simulation including a first simulated object (figure 4), said simulation being configured to implement the motion of said first simulated object in response to motion of a physical object of an interface device controlled by a user (figure 5),

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wherein said physical object has a physical position in a physical work space, and wherein a position control mapping between said simulated location of said first simulated object and said physical position of said physical object exists (section 2.1), said simulation being further configured to generate a second simulated object having boundaries such that said second simulated object impedes the simulated motion of said first simulated object when the trajectory of said first simulated object intersects said boundaries of said second simulated object (sections 2.2 and 3.1); providing information causing a display device to display the location and motion of said first simulated object and said second simulated object such that when said first simulated object and second simulated object collide (section 3.2), the first simulated object is displayed at the boundary of the second simulated object as if unable to substantially penetrate said second simulated object, even if the motion of said physical object would indicate that a penetration should occur with respect to the position control mapping (figure 11); and providing information causing a force feedback mechanism (figure 8) to impart to a user of said force feedback mechanism a physical sensation that corresponds to the simulated physical interaction of said first simulated object with said second simulated object when the trajectory of said first simulated object intersects the boundaries of said second simulated object (figure 11).

However, Iwata fails to disclose or recite specifically determining a path simulated object based position of that object. On the other hand Schena et al. discloses specifically determining a path simulated object based position of that object (page 5, paragraphs 55-57). Further it would have been obvious to one of ordinary skill in the art to modify Iwata apparatus with Schena et al. to be able to determine path of an object based on the prior position of the first object (vehicle

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see page 5, paragraph 57), so the tracking computer system providing second object (wall or surface, with force feedback see page 5, paragraph 57) which impedes first object path.

With regard to claim 86 Iwata teaches a method for providing an interaction between displayed objects in a graphical environment (figures 11-13) implemented by a host computer (section 2-2 TITAN), wherein a user interfaces with said graphical environment using a force feedback device (figure 5) coupled (figure 1, RS-232C) to said host computer, the method comprising: moving a first graphical object (figure 4) in response to movement of a user manipulatable object of said force feedback device by said user, said movement of said first graphical object provided according to said movement of said user manipulatable object; determining whether said first graphical object has engaged a second graphical object (figures 11-13) by examining a path of said First graphical object in said graphical environment, said path determined by examining a current location of said first graphical object and a previous location of said first graphical object (section 3-2); providing an illusion of rigidity of said second graphical object by displaying said first graphical object as remaining engaged with said second graphical object when said path of said first graphical object has been determined to move through said second graphical object according to said movement of said user manipulatable object (section 3-2 and figure 9); and providing information that causes said force feedback device coupled to said host computer to output an opposing force on said user manipulatable object by at least one actuator (figure 8) in said force feedback device in a direction approximately opposite to said path of said first graphical object while said first graphical object is engaged with said second graphical object (figure 8).

With regard to claim 97 Iwata teaches a method for providing an interaction between displayed objects in a graphical environment (figures 11-13) implemented by a host computer (figure 1, TITAN), wherein a user interfaces with said graphical environment using a tactile feedback device (figure 5) coupled (figure 1, RS-232C) to said host computer, the method comprising: moving a first graphical object (figure 4) in response to movement of a user manipulatable object of said force feedback device by said user (figure 5), said movement of said first graphical object provided according to said movement of said user manipulatable object (abstract); determining whether said first graphical object has collided with a second graphical object by examining a path of said first graphical object in said graphical environment (figure 9 and section 3.2); providing an illusion of rigidity of said second graphical object by displaying said first graphical object as remaining engaged with the surface of said second graphical object when said path of said first graphical object has been determined to move through the surface of said second graphical object according to said movement of said user manipulatable object (section 3.2); and providing information that causes said tactile feedback device coupled to said host computer to output a sensation felt by said user, produced by at least one actuator in said tactile feedback device, corresponding with the displayed interaction between said first graphical object and said second graphical object (figure 8).

Claims 78-82,84,87-89,91,93,100-104,106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata in view of Schena et al.

The main objective of the Iwata apparatus is directed towards a force feedback interface device for use with a host computer displaying a graphical environment and this was shown to read on

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applicant's claims above. The recitations with respect to the manner in which the apparatus is intended to be used does not necessarily differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structural limitations of the claim.

Therefore the body of the apparatus claim which is directed towards, a computer readable medium including program instructions for simulating the spatial interaction of a displayed first simulated object with a displayed second simulated object in a computer - simulated spatial environment such that the user is provided with a force feedback that realistically represents said interaction, is not positively linked to the intended use or field of use recitations such as; a restoring force that is proportional, restoring force includes a spring force, restoring force includes a damping force, restoring force includes an inertial force, restoring force includes a component resulting from friction, and a restoring force includes a weighting factor and therefore these mere recitations of intended use or field of use are not given patentable weight.

Further it would have been obvious to one of ordinary skill in the art to use the Iwata apparatus as it was intended to be used such as "a restoring force includes a spring force" or any other well known and suitable use including those specified by the applicant because this prior art structure is capable of performing the intended use or field of use recitations. Also note Iwata in his APPLICATION AREAS section 4 states; *"Artificial reality is expected to be applied to various categories of human interface. Our application of the virtual space manipulation system is focused on two major fields of application of computer graphics: computer aided design and 3D animation."* This section provided the suggestion and motivation to use any well-known classical dynamic equation used to model reality known in the art of computer aided design and 3D animation with the force feedback apparatus of Iwata and for this reason applicant's dependent

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stated recitations are viewed as intended use recitations. *See In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Further Schena et al. teaches the restoring force includes a spring (page 16, paragraphs 145,146, page 17, paragraphs 146-150) and network is the world wide web (page 1, paragraph 5).

Allowable Subject Matter

4. Claims 83, 85, 90,92,98,105,107 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claims 94-96 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter: The invention as claimed in each of applicant's independent claim 94 when considered as a whole, the exact arrangement of parts and/or the inter connections and functions, is not taught nor suggested by the prior art made of record. With regard to claim 94 the prior art does not teach or fairly suggest "providing information that causes said force feedback device coupled to said host computer to output (ii) a friction force on said user manipulatable object by at least one actuator in said force feedback device when said user manipulatable object is moved in a direction corresponding to a direction approximately perpendicular to said path of engagement of said first graphical object while said first and second graphical objects are engaged", in combination with all the other limitations of the claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

7. Applicant's arguments with respect to claims 77,86,97, have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Berend et al. (5,692,117) Method and apparatus for producing animated drawings and in-between drawings..

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prabodh M. Dharia whose telephone number is 571-272-7668. The examiner can normally be reached on M-F 8AM to 5PM.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

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November 29, 2005

A handwritten signature in black ink, appearing to read 'Vijay Shankar', with a long, sweeping horizontal stroke extending to the right.

VIJAY SHANKAR
PRIMARY EXAMINER